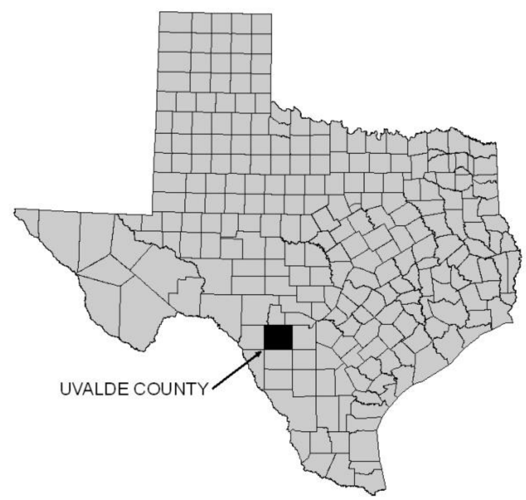
FLOOD INSURANCE STUDY



UVALDE COUNTY, TEXAS

AND INCORPORATED AREAS

COMMUNITY NAME	COMMUNITY NUMBER
CITY OF UVALDE	480630
CITY OF SABINAL	481039
UVALDE COUNTY (unincorporated areas)	480629

EFFECTIVE: November 4, 2010

Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER
48463CV000A

NOTICE TO
FLOOD INSURANCE STUDY USERS

Communities participating in the National Flood Insurance Program have established repositories of flood hazard data for floodplain management and flood insurance purposes. This Flood Insurance Study may not contain all data available within the repository. It is advisable to contact the community repository for any additional data.

Part or all of this Flood Insurance Study may be revised and republished at any time. In addition, part of this Flood Insurance Study may be revised by the Letter of Map Revision process, which does not involve republication or redistribution of the Flood Insurance Study. It is, therefore, the responsibility of the user to consult with community officials and to check the community repository to obtain the most current Flood Insurance Study components.

Selected Flood Insurance Rate Map panels for this community contain information that was previously shown separately on the corresponding Flood Boundary and Floodway Map panels (e.g., floodways, cross sections). In addition, former flood hazard zone designations have Uvalde County changed as follows:

Old Zone(s)	New Zone
A1 through A30	AE
B	X
C	X

Initial Countywide FIS Effective Date: November 4, 2010

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FLOOD INSURANCE STUDY
UVALDE COUNTY, TEXAS
AND INCORPORATED AREAS

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study (FIS) report investigates the existence and severity of flood hazards in the geographic area of Uvalde County, Texas, including the Cities of Sabinal and Uvalde, and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This study has developed flood-risk data for various areas of the community that will be used to establish actuarial flood insurance rates and to assist the community in its efforts to promote sound floodplain management. Minimum floodplain management requirements for participation in the National Flood Insurance Program (NFIP) are set forth in the Code of Federal Regulations at 44 CFR, 60.3.

In some states or communities, floodplain management criteria or regulations may exist that are more restrictive or comprehensive than the minimum Federal requirements. In such cases, the more restrictive criteria take precedence and the State or other jurisdictional agency will be able to explain them.

1.2 Authority and Acknowledgments

The sources of authority for this FIS report are the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

The original hydrologic and hydraulic analyses for this study were performed by URS Company for the Federal Emergency Management Agency (FEMA), under Contract No. H-4643. The original work was completed in December 1979 (Reference 1).

The revision to this study, which involved new hydrologic and hydraulic analyses for the Leona River and Taylor Slough, was completed by Dewberry & Davis in August 1985. These new analyses were based on a reduction in discharges resulting from a series of flood protection dams constructed by the Soil Conservation Service (SCS).

The floodplain mapping and redelineation for this countywide revision were performed by Mapping Alliance Partnership VI (MAPVI) for FEMA Region VI, under Task Order 43 of Contract No. EMT-2002-CO-0052. MAPVI is a joint venture of URS Corporation, Greenhorne & O'Mara, and Spectrum Mapping. These revisions were completed in February 2009.

1.3 Coordination

The purpose of an initial Consultation Coordination Officer's (CCO) meeting is to discuss the scope of the FIS. The initial and final meeting dates for the previous FIS reports for Uvalde County and its communities are listed in Table 1, "Initial and Final CCO Meetings."

Table 1 – Initial and Final CCO Meetings

Community Name	Initial Meeting	Final Meeting
City of Uvalde	March 15, 1978	April 7, 1981
City of Sabinal	*	*
Uvalde County	*	August 12, 1986

Data Not Available *

For this countywide revision, an initial meeting was held on May 7, 2008, and attended by representatives of FEMA, the communities, and MAPVI. The nature and purpose of this meeting was to identify the streams to be studied or restudied and to explain the purpose of the FIS.

The results of the study were reviewed at the final CCO meeting held on June 22, 2009, and attended by representatives of FEMA, the communities, and MAPVI.

2.0 AREA STUDIED

2.1 Scope of Study

This FIS report covers the geographic area of Uvalde County, Texas, including the incorporated communities listed in Section 1.1. The areas studied by detailed methods were selected with priority given to all known flood hazards and areas of projected development or proposed construction through Uvalde County, Texas. Approximate analyses were used to study those areas having a low development potential or minimal flood hazards. The scope and methods of study were proposed to, and agreed upon, by FEMA and Uvalde County, Texas.

Detailed study streams that were redelineated are shown in Table 2, "Areas Studied by Detailed Methods."

Table 2 – Areas Studied by Detailed Methods

Stream	Limits of Detailed Study
Cooks Slough	From approximately 600 feet upstream from Crystal City Highway to approximately 2,480 feet upstream of Highway 1052.
Leona River	From approximately 8,230 feet upstream of East Main Street to the Southern Pacific Railroad.
Taylor Slough	From approximately 120 feet downstream of the county boundary to approximately 2,320 feet upstream of the confluence with Taylor Slough Tributary.

Table 2 – Areas Studied by Detailed Methods (continued)

Stream	Limits of Detailed Study
Taylor Slough Tributary	From its confluence with Taylor Slough to approximately 2,245 feet upstream.

2.2 Community Description

Uvalde County is located in south-central Texas, approximately 83 miles west of the City of San Antonio. The county is bordered on the north by Edwards, Real and Bandera Counties, on the east by Medina County; on the south by Zavala County; and on the west by Kinney County. The City of Uvalde is the county seat and commercial center of Uvalde County (Reference 2). The 2000 population of Uvalde County was reported to be 25,926 people (Reference 2).

The economy of Uvalde County is primarily agricultural, with approximately 85 percent of its land devoted to farms or ranches. The county produces livestock, vegetables, wool, mohair, honey, pecans, and grains. Rock-asphalt is mined at two places within the county. The City of Uvalde has a well balanced economy consisting of ranching and the production of clothes, wool, mohair, and construction materials. Scenic landscapes and numerous waterways attract recreation and tourist traffic.

The climate in Uvalde County is subtropical, characterized by warm summers and mild winters. January is the coldest month, with an average minimum temperature of 37 degrees Fahrenheit (°F). July is the warmest month, with an average maximum temperature of 96°F (Reference 3). Temperature extremes have ranged from 7°F to 114°F (Reference 3). The average annual rainfall is 23.7 inches (Reference 2). Farming in the City of Uvalde is done using both irrigation and dry land farming techniques. Approximately one quarter of the cultivated land in the county is irrigated with deep wells as the primary water source.

The topography near the streams studied by detailed methods is nearly level to gently sloping, transforming to undulating and hilly in the upper portions of the streams (Reference 4). The average elevation of the City of Uvalde is 913 feet. The topography of Uvalde County varies from hilly in the northern part of the county, which is part of the Edwards Plateau, to relatively flat in the southern part of the county, which is part of the Gulf Coastal Plain (Reference 4).

2.3 Principal Flood Problems

City of Uvalde experiences flooding from the Cooks Slough, Leona River, and Taylor Slough. U.S. Route 90 crosses each of these streams. Its bridge crossings are adequate for storm flows and pose only moderate obstructions to the flow. The bridge structures at U.S. Route 83 over Cooks Slough also create only moderate obstructions. However, the structure at FM 1023 over Taylor Slough, combined with an inadequate channel upstream of the structure, creates significant backwater effects upstream to a point near U.S. Route 90. Mild gradients of streambeds and poorly defined or inadequate channels are the primary cause for most of the flooding in other areas.

Mild gradients of streambeds and poorly defined or inadequate channels are the primary cause for flooding in the unincorporated areas.

The most notable flood in recent years occurred in August 1953. The total rainfall for this storm occurred over a 6.5-hour period and varied from approximately 3 inches in the upper portion of the watershed to the official 4.51 inches recorded at Uvalde. The recurrence interval of the resulting flood peak was estimated at approximately 17 years. The flood inundated approximately 5,700 acres of floodplain in the watershed, of which 500 acres are located inside the urban area of Uvalde along the Cooks Slough and Leona River (Reference 5).

A flood of greater magnitude was experienced in the summer of 1932. High-water marks just upstream of U.S. Route 90 indicated that the Leona River rose to an approximate elevation of 900 feet at that location. This was approximately 5 feet higher than the 1953 flood.

Rainfall, triggered by Tropical Storm Amelia, was only 2.2 inches in the City of Uvalde. However, rainfall in the upper portion of the Leona River watershed was sufficient to cause high water, which stranded some residents and required evacuation of others.

2.4 Flood Protection Measures

A series of dams have been constructed to provide flood protection for Uvalde County. The effects of these dams are reflected in this study.

3.0 ENGINEERING METHODS

For the flooding sources studied by detailed methods in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude that are expected to be equaled or exceeded once on the average during any 10-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for floodplain management and for flood insurance rates. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10-, 2-, 1-, and 0.2-percent-annual-chance, respectively, of being equaled or exceeded during any year. Although the recurrence interval represents the long-term, average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood that equals or exceeds the 1-percent-annual-chance (100-year) flood in any 50-year period is approximately 40 percent (4 in 10); for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak discharge-frequency relationships for the flooding source studied in detail affecting the county.

The hydrologic analyses for the streams studied by detailed methods were obtained from the Flood Insurance Study for the City of Uvalde (Reference 1). That study utilized the SCS TR-20 computer program to determine the peak flows (Reference 6). This program employs methods of estimating direct runoff from storm rainfall based on procedures developed by the Soil Conservation Service (SCS). Rainfall and watershed data, including drainage area, time of concentration, and soil properties, were used as hydrologic parameters in calculating peak flows.

Surface conditions were evaluated by land-use and treatment classifications. Peak flows determined by the SCS were verified at selected locations according to methods outlined in the SCS National Engineering Handbook (Reference 7). The peak flows were based on 1-, 5-, 25-, and 100-year recurrence intervals. The physical parameters of soil type and group classification were confirmed following a field reconnaissance of the watershed and were utilized by the SCS in determining a combined hydrologic parameter referred to as a curve number. A curve number of 74 was determined to be representative of the watershed of Cooks Slough, and a curve number of 78 was used for the remaining streams.

The additional parameters of drainage area and stream length were verified from a U.S. Geological Survey (USGS) topographic map of the drainage basin (Reference 8). Rainfall data were comparable to that obtained from Technical Paper No. 40 (Reference 9).

The 10- and 50-year peak flows necessary for this study were determined by interpolating the SCS results on a log-normal basis. Similarly, the 500-year flow was extrapolated from the SCS flows.

Peak discharge-drainage area relationships for the 10-, 2-, 1-, and 0.2-percent-annual-chance floods for each stream studied by detailed methods are presented in Table 3, "Summary of Discharges." The discharges for Cooks Slough are attenuated in the downstream direction due to the storage in the overbank areas.

Table 3 – Summary of Discharges

FLOODING SOURCE AND LOCATION	**DRAINAGE AREA (SQ. MILES)**	**10%-ANNUAL-CHANCE**	**2%-ANNUAL-CHANCE**	**1%-ANNUAL-CHANCE**	**0.2%-ANNUAL-CHANCE**
LEONA RIVER					
At Doughty Avenue	47.64	1,647	2,742	3,492	6,000
At East Nopal Street	47.03	1,572	2,584	3,306	5,873
COOKS SLOUGH					
At U.S. Route 90	30.69	6,185	10,304	12,162	16,861
At Fort Clark Street	30.20	6,130	10,205	12,043	16,676
At Grade Control Struct	28.98	5,913	9,822	11,582	15,971
At FM Highway 1052	28.05	5,837	9,681	11,411	15,719

Table 3 – Summary of Discharges (continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (SQ. MILES)	10%-ANNUAL-CHANCE	2%-ANNUAL-CHANCE	1%-ANNUAL-CHANCE	0.2%-ANNUAL-CHANCE
TAYLOR SLOUGH					
Approximately 100 feet downstream of U.S. Route 90	16.23	1,161	2,510	3,193	4,831
TAYLOR SLOUGH TRIBUTARY					
At upstream limit of study	4.30	1,930	2,950	3,430	4,470

* Data Not Available

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals. Users should be aware that flood elevations shown on the FIRM represent rounded whole-foot elevations and may not exactly reflect the elevations shown on the Flood Profiles or in the Floodway Data tables in the FIS report. Flood elevations shown on the FIRM are primarily intended for flood insurance rating purposes. For construction and/or floodplain management purposes, users are cautioned to use the flood elevation data presented in this FIS in conjunction with the data shown on the FIRM.

Cross sections for the backwater analyses of the streams studied by detailed methods were obtained from aerial photographs (Reference 10). Horizontal and vertical ground control was established using field surveys. The streambed elevations below the water surface were obtained by field measurement. All bridges and culverts were field checked to obtain elevation data and to determine or verify structural geometry of bridge plans obtained from the State Department of Highways and Public Transportation.

Water-surface elevations of floods of the selected recurrence intervals were computed using the U.S. Army Corps of Engineers (USACE) HEC-2 step-backwater computer program (Reference 11). Flood profiles were drawn showing computed water-surface elevations for floods of the selected recurrence intervals. Starting water-surface elevations for the streams studied by detailed methods were calculated by the slope/area method.

It should be noted that certain areas within the study limits for City of Uvalde required special consideration in determining floodwater elevations. A point of special consideration involves a "breakout" of the 50-, l00-, and 500-year frequency flows from the Cooks Slough watershed into an adjacent watershed to the west (Reference 5). This loss of flow occurs upstream of U.S. Route 83 from approximate stream station 2900 to station 4500. Since the two structural openings through U.S. Route 83 in the adjacent watershed are inadequate to handle the breakout flows, a portion of each of these overflows will re-enter the Cooks Slough watershed and discharge through the two bridge structures at U.S. Route 83 and Cooks Slough. No breakout occurs for the 10-year frequency flow.

Channel roughness factors (Manning's "n") used in the hydraulic computations were estimated from field observations of the arroyos and floodplain areas, professional experience, and experimental data from the USACE. The roughness values are summarized in Table 4, "Manning's "n" Value Table."

Table 4 – Manning's "n" Value Table

Stream	Channel	Overbank
Cooks Slough	0.030-0.060	0.045-0.110
Leona River	0.025-0.070	0.025-0.100
Taylor Slough	0.030-0.075	0.030-0.100
Taylor Slough Tributary	0.030-0.075	0.030-0.100

Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway was computed (Section 4.2), selected cross-section locations are also shown on the FIRM (Exhibit 2).

The hydraulic analyses for this study were based on unobstructed flow. The flood elevations shown on the Flood Profiles (Exhibit 1) are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

3.3 Vertical Datum

All FIS reports and FIRMs are referenced to a specific vertical datum. The vertical datum provides a starting point against which flood, ground, and structure elevations can be referenced and compared. Until recently, the standard vertical datum used for newly created or revised FIS reports and FIRMs was the National Geodetic Vertical Datum of 1929 (NGVD29). With the completion of the North American Vertical Datum of 1988 (NAVD88), many FIS reports and FIRMs are now prepared using NAVD as the referenced vertical datum.

Flood elevations shown in this FIS report and on the FIRM are referenced to the NAVD. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the NGVD29 and NAVD88, visit the National Geodetic Survey website at www.ngs.noaa.gov, or contact the National Geodetic Survey at the following address:

NGS Information Services, NOAA, N/NGS12
National Geodetic Survey SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

In this countywide revision, several vertical datum conversions were used to convert all elevations in Uvalde County from NGVD29 to NAVD88. Datum conversion factors are summarized in Table 5, "Vertical Datum Conversion".

Table 5 – Vertical Datum Conversion

Quad Name	Corner	Longitude	Latitude	Conversion from NGVD to NAVD
Blanco Lake	SE	-99.500	29.250	0.407
Bull Waterhole	SE	-100.125	29.500	0.374
Camp Wood	SE	-100.000	29.625	0.305
Chalk Bluff	SE	-99.875	29.250	0.400
Cline	SE	-100.000	29.125	0.387
Comanche Waterhole	SE	-99.375	29.375	0.397
Concan	SE	-99.625	29.375	0.335
Crown Mountain	SE	-99.875	29.625	0.364
Deep Creek	SE	-99.750	29.375	0.364
Flatrock Crossing	SE	-99.375	29.500	0.397
Garner Field	SE	-99.625	29.125	0.433
Garner Field NE	SE	-99.500	29.125	0.397
Hacienda	SE	-99.875	29.125	0.430
Irishman Hill	SE	-99.375	29.125	0.381
Kelley Peak	SE	-100.125	29.625	0.404
Knippa	SE	-99.625	29.250	0.433
Laguna	SE	-100.000	29.375	0.371
Lake Creek	SE	-99.875	29.500	0.427
Leakey	SE	-99.750	29.625	0.256
Magers Crossing	SE	-99.625	29.500	0.318
Montell	SE	-100.000	29.500	0.364
Mustang Waterhole	SE	-100.000	29.250	0.400
Odlaw	SE	-100.125	29.125	0.377
Reagan Wells	SE	-99.750	29.500	0.325
Rio Frio	SE	-99.625	29.625	0.331
Sabinal	SE	-99.375	29.250	0.404
Salmon Peak	SE	-100.125	29.375	0.348
Seco Pass	SE	-99.375	29.625	0.449
Sevenmile Hill	SE	-99.750	29.250	0.449
Sycamore Mountain	SE	-99.875	29.375	0.423
Trio	SE	-99.500	29.375	0.322
Turkey Mountain	SE	-100.125	29.250	0.322
Utopia	SE	-99.500	29.500	0.331
Uvalde	SE	-99.750	29.125	0.456
Vanderpool	SE	-99.500	29.625	0.344
			AVERAGE	**0.378 feet**

Temporary vertical monuments are often established during the preparation of a flood hazard analysis for the purpose of establishing local vertical control. Although these monuments are not shown on the FIRM, they may be found in the Technical Support Data Notebook associated with the FIS report and FIRM for this community. Interested individuals may contact FEMA to access these data.

To obtain current elevation, description, and/or location information for benchmarks shown on this map, please contact the Information Services Branch of the NGS at (301) 713-3242, or visit their website at www.ngs.noaa.gov.

4.0 FLOODPLAIN MANAGEMENT APPLICATIONS

The NFIP encourages State and local governments to adopt sound floodplain management programs. Therefore, each FIS provides 1-percent-annual-chance (100-year) flood elevations and delineations of the 1- and 0.2-percent-annual-chance (500-year) floodplain boundaries and 1-percent-annual-chance floodway to assist communities in developing floodplain management measures. This information is presented on the FIRM and in many components of the FIS report, including Flood Profiles and Floodway Data Table. Users should reference the data presented in the FIS report as well as additional information that may be available at the local map repository before making flood elevation and/or floodplain boundary determinations.

4.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1-percent-annual-chance flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2-percent-annual-chance flood is employed to indicate additional areas of flood risk in the community. For each stream studied by detailed methods, the 1- and 0.2-percent-annual-chance floodplain boundaries have been delineated using the flood elevations determined at each cross section. Between cross sections, the boundaries were interpolated using topographic maps at a scale of 1:24,000, 1:12,000, and 1:6,000 with a contour interval of 10 feet (Reference 12).

In cases where the 1- and 0.2-percent-annual-chance floodplain boundaries are close together, only the 1-percent-annual-chance floodplain boundary has been shown. On this map, the 1-percent-annual-chance floodplain boundary corresponds to the boundary of the areas of special flood hazards (Zones A and AE), and the 0.2-percent-annual-chance floodplain boundaries corresponds to the boundary of areas of moderate flood hazards. Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

For the streams studied by approximate methods, only the 1-percent-annual-chance floodplain boundary is shown on the Flood Insurance Rate Map (Exhibit 2).

4.2 Floodways

Encroachment on floodplains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of floodplain management involves balancing the economic gain from floodplain development against the resulting increase in flood hazard. For purposes of the NFIP, a floodway is used as a tool to assist local communities in this aspect of floodplain management. Under this concept, the area of the 1-percent-annual-chance floodplain is divided into a floodway and a floodway fringe. The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment so that the base flood can be carried without substantial increases in flood heights. Minimum Federal standards limit such increases to 1 foot, provided that hazardous velocities are not produced. The floodways in this study are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway studies.

The floodways presented in this study were computed for certain stream segments on the basis of equal-conveyance reduction from each side of the floodplain. Floodway widths were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. The results of the floodway computations are tabulated for selected cross sections see (Table 6, Floodway Data). In cases where the floodway and 1-percent-annual-chance floodplain boundaries are either close together or collinear, only the floodway boundary is shown. Portions of the floodway widths for Cooks Slough and the Leona River extend beyond the corporate limits.

The area between the floodway and 1-percent-annual-chance floodplain boundaries is termed the floodway fringe. The floodway fringe encompasses the portion of the floodplain that could be completely obstructed without increasing the water-surface elevation (WSEL) of the base flood more than 1 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 1.

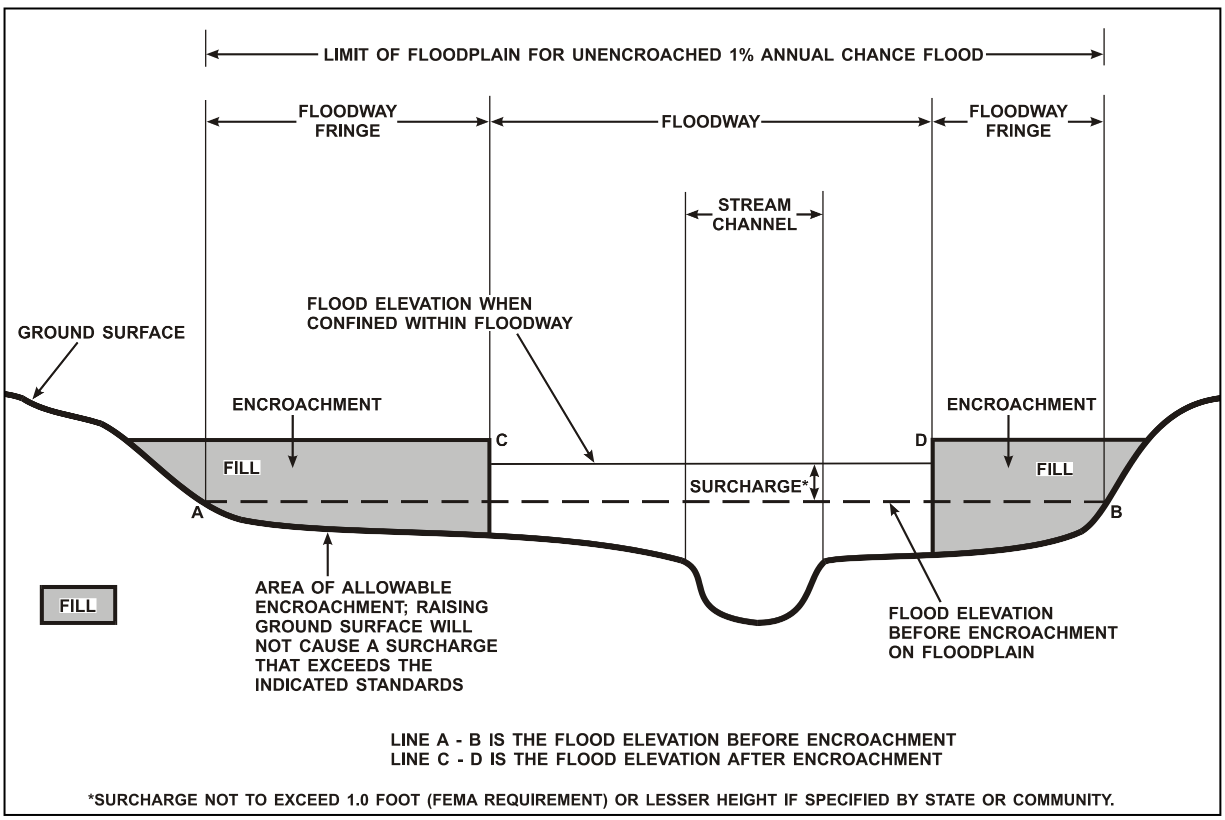

Figure 1 - Floodway Schematic

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
COOKS SLOUGH								
A	625	229	2,075	6.1	893.3	893.3	893.3	0.0
B	3,675	236	2,258	5.5	895.9	895.9	895.9	0.0
C	5,550	234	2,187	5.7	897.6	897.6	897.6	0.0
D	8,055	307	2,521	4.8	899.7	899.7	899.7	0.0
E	8,560	322	2,686	4.5	900.3	900.3	900.3	0.0
F	9,995	263	2,255	5.4	901.5	901.5	901.5	0.0
G	10,210	240	2,359	5.1	902.9	902.9	902.9	0.0
H	11,005	242	2,330	5.1	903.5	903.5	903.5	0.0
I	12,850	266	2,700	4.3	904.5	904.5	904.5	0.0
J	12,955	256	1,322	8.8	904.4	904.4	904.4	0.0
K	13,065	274	2,308	5.0	905.4	905.4	905.4	0.0
L	15,510	140	1,669	6.9	910.1	910.1	911.0	0.9
M	16,748	279	2,991	4.2	913.6	913.6	913.6	0.0
N	19,058	320	3,323	3.7	918.3	918.3	919.3	1.0
O	21,533	742	5,031	2.3	920.6	920.6	921.6	1.0

[1] Feet above Crystal City Highway

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

UVALDE COUNTY, TX
AND INCORPORATED AREAS

FLOODWAY DATA

COOKS SLOUGH

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
LEONA RIVER								
A	1,500	291	1,346	2.7	877.8	877.8	878.7	0.9
B	2,923	249	1,557	2.2	879.9	879.9	880.3	0.4
C	7,338	175	812	4.3	887.5	887.5	887.5	0.0
D	9,653	284	1,211	2.8	888.9	888.9	888.9	0.0
E	10,363	282	1,013	3.3	891.4	891.4	891.4	0.0
F	10,893	306	937	3.5	894.1	894.1	894.1	0.0
G	11,525	335	1,390	2.4	895.4	895.4	895.4	0.0
H	12,110	293	895	3.7	896.0	896.0	896.0	0.0
I	15,195	390	1,166	2.8	899.8	899.8	899.8	0.0
J	16,756	300	1,019	3.2	903.1	903.1	903.1	0.0
K	17,353	309	1,536	2.1	903.9	903.9	903.9	0.0
L	19,120	277	705	4.5	905.1	905.1	905.1	0.0
M	21,190	350	1,441	2.2	912.5	912.5	912.5	0.0

[1]Feet above confluence of Taylor Slough

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

UVALDE COUNTY, TX
AND INCORPORATED AREAS

FLOODWAY DATA

LEONA RIVER

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
TAYLOR SLOUGH								
A	165[1]	299	1,254	2.5	909.4	909.4	909.8	0.4
B	2,930[1]	134	915	3.5	917.0	917.0	917.1	0.1
C	3,440[1]	187	919	3.5	917.3	917.3	917.4	0.1
D	4,327[1]	181	960	3.3	918.9	918.9	919.0	0.1
E	6,235[1]	237	453	4.4	927.9	927.9	927.9	0.0
TAYLOR SLOUGH TRIBUTARY								
A	1,520[2]	220	1,025	3.4	930.2	930.2	931.2	1.0
B	2,230[2]	210	530	6.5	933.0	933.0	933.8	0.8

[1] Feet Upstream of Corporate Limit
[2] Feet Above Confluence With Taylor Slough

FEDERAL EMERGENCY MANAGEMENT AGENCY

UVALDE COUNTY, TX
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FLOODWAY DATA

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TABLE 6

5.0 INSURANCE APPLICATIONS

Zone A

Zone A is the flood insurance rate zone that corresponds to the 1-percent-annual-chance floodplains that are determined in the FIS report by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no base (1-percent-annual-chance) flood elevations (BFEs) or depths are shown within this zone.

Zone AE

Zone AE is the flood insurance rate zone that corresponds to the 1-percent-annual-chance floodplains that are determined in the FIS report by detailed methods. Whole-foot BFEs derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone X

Zone X is the flood insurance rate zone that corresponds to areas outside the 0.2-percent-annual-chance floodplain, areas within the 0.2-percent-annual-chance floodplain, areas of 1-percent-annual-chance flooding where average depths are less than 1 foot, areas of 1-percent-annual-chance flooding where the contributing drainage area is less than 1 square mile (sq. mi.), and areas protected from the base flood by levees. No BFEs or depths are shown within this zone.

6.0 FLOOD INSURANCE RATE MAP

The FIRM is designed for flood insurance and floodplain management applications.

For flood insurance applications, the map designates flood insurance risk zones as described in Section 5.0 and, in the 1-percent-annual-chance floodplains that were studied by detailed methods, shows selected whole-foot BFEs or average depths. Insurance agents use the zones and BFEs in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

For floodplain management applications, the map shows by tints, screens, and symbols, the 1- and 0.2-percent-annual-chance floodplains, floodways, and the locations of selected cross sections used in the hydraulic analyses and floodway computations.

The countywide FIRM presents flooding information for the geographic area of Uvalde County. Previously, FIRMs were prepared for each incorporated community of the County identified as flood-prone. Historical data relating to the maps prepared for each community are presented in Table 7, “Community Map History.”

7.0 OTHER STUDIES

This FIS report either supersedes or is compatible with all previous studies published on streams studied in this report and should be considered authoritative for the purposes of the NFIP.

8.0 LOCATION OF DATA

Information concerning the pertinent data used in the preparation of this study can be obtained by contacting FEMA Region VI, Federal Insurance and Mitigation Division, 800 North Loop 288, Denton, Texas 76209.

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISIONS DATE	FIRM EFFECTIVE DATE	FIRM REVISIONS DATE
Uvalde County	January 24, 1978	None	August 16, 1996	None
Uvalde, City of	May 31, 1974	January 16, 1976	March 15, 1982	September 29, 1986
Sabinal, City of	September 26, 1975	None	April 1, 2007	None

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

UVALDE COUNTY, TX

AND INCORPORATED AREAS

COMMUNITY MAP HISTORY

9.0 BIBLIOGRAPHY AND REFERENCES

1. Federal Emergency Management Agency, Flood Insurance Study, City of Uvalde, Uvalde County, Texas, Washington, D. C., September 29, 1986.

2. U.S. Census Bureau, 22 Retrieved August 19, 2008 www.factfinder.census.gov

3. The Weather Channel, 22 Retrieved August 19, 2008 www.weather.com

4. U.S. Department of Agriculture, Soil Conservation Service, General Soil Map, Uvalde County, Texas, June 1972.

5. U.S. Department of Agriculture, Soil Conservation Service, Work Plan for Watershed Protection and Flood Prevention, Leona River Watershed, Uvalde County, Texas, January 1973.

6. U.S. Department of Agriculture, Soil Conservation Service, Technical Release No. 20, Computer Program, Project Formulation, Hydrology, Washington, D. C., 1965.

7. U.S. Department of Agriculture, Soil Conservation Service, National Engineering Handbook, Section 4, Hydrology, Washington, D. C., January 1971.

8. U.S. Department of the Interior, Geological Survey, 7.5-Minute Series Topographic Maps, Scale 1:24,000, Contour Interval 10 Feet: Uvalde, Texas, 1971.

9. U.S. Department of Commerce, Weather Bureau, Technical Paper No. 40, Rainfall Frequency Atlas of the United States, Washington, D. C., 1961, Revised 1963.

10. International Aerial Mapping Company of San Antonio, Texas, Aerial Photographs, Scale 1"=500': City of Uvalde, Uvalde County, Texas, November 1978.

11. U.S. Army Corps of Engineers, Hydrologic Engineering Center, HEC-2 Water-Surface Profiles, Generalized Computer Program, Davis, California, November 1976.

12. U.S. Geological Survey, 7.5-Minute Series Topographic Maps, Scale 1:6,000, 1:12,000, 1:24,000 1999.

9.0 BIBLIOGRAPHY AND REFERENCES

1. Federal Emergency Management Agency, Flood Insurance Study, City of Uvalde, Uvalde County, Texas, Washington, D. C., September 29, 1986.

2. U.S. Census Bureau, 22 Retrieved August 19, 2008 www.factfinder.census.gov

3. The Weather Channel, 22 Retrieved August 19, 2008 www.weather.com

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7. U.S. Department of Agriculture, Soil Conservation Service, National Engineering Handbook, Section 4, Hydrology, Washington, D. C., January 1971.

8. U.S. Department of the Interior, Geological Survey, 7.5-Minute Series Topographic Maps, Scale 1:24,000, Contour Interval 10 Feet: Uvalde, Texas, 1971.

9. U.S. Department of Commerce, Weather Bureau, Technical Paper No. 40, Rainfall Frequency Atlas of the United States, Washington, D. C., 1961, Revised 1963.

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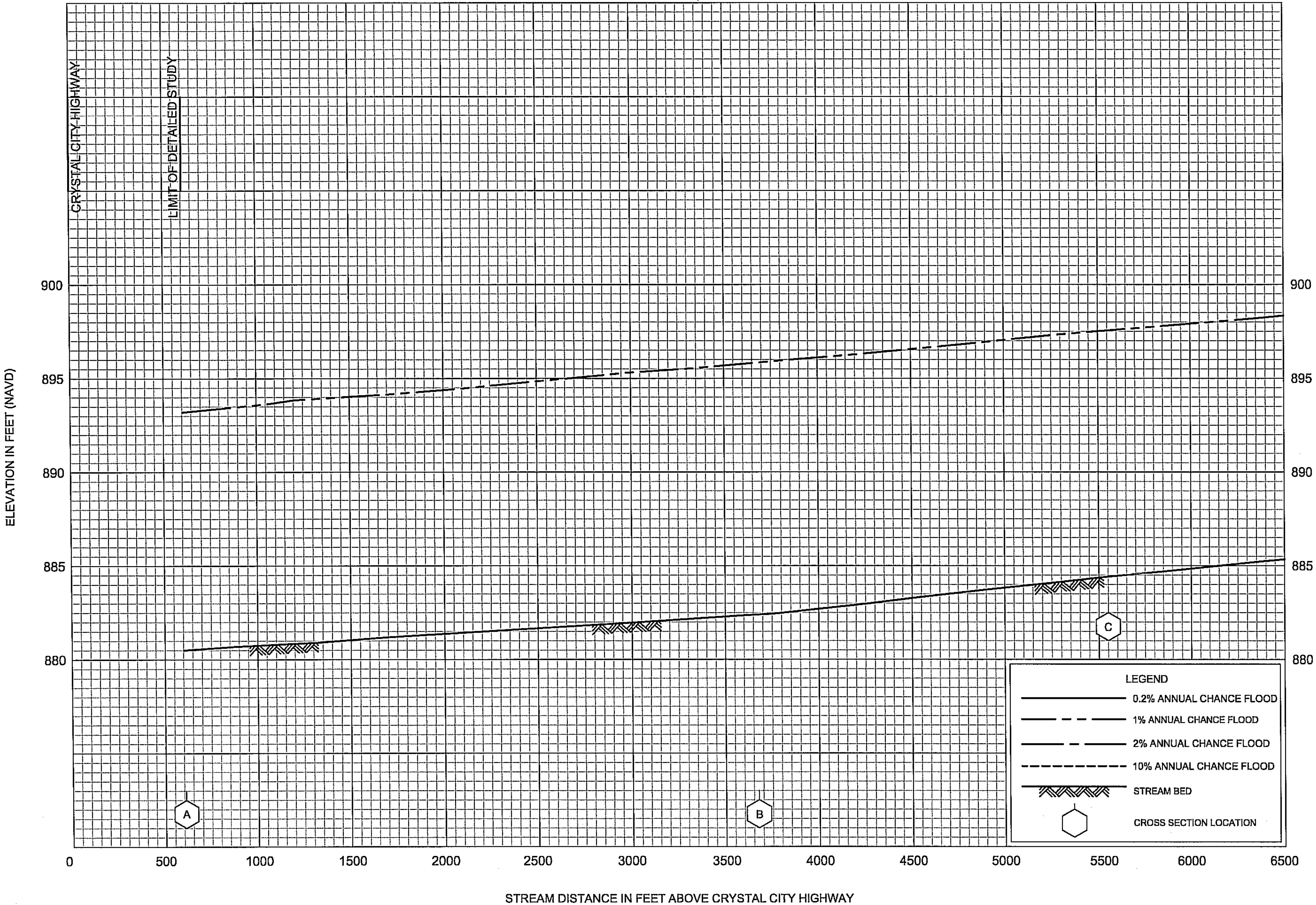
11. U.S. Army Corps of Engineers, Hydrologic Engineering Center, HEC-2 Water-Surface Profiles, Generalized Computer Program, Davis, California, November 1976.

12. U.S. Geological Survey, 7.5-Minute Series Topographic Maps, Scale 1:6,000, 1:12,000, 1:24,000 1999.



FLOOD PROFILES

COOKS SLOUGH

FEDERAL EMERGENCY MANAGEMENT AGENCY

UVALDE COUNTY, TX

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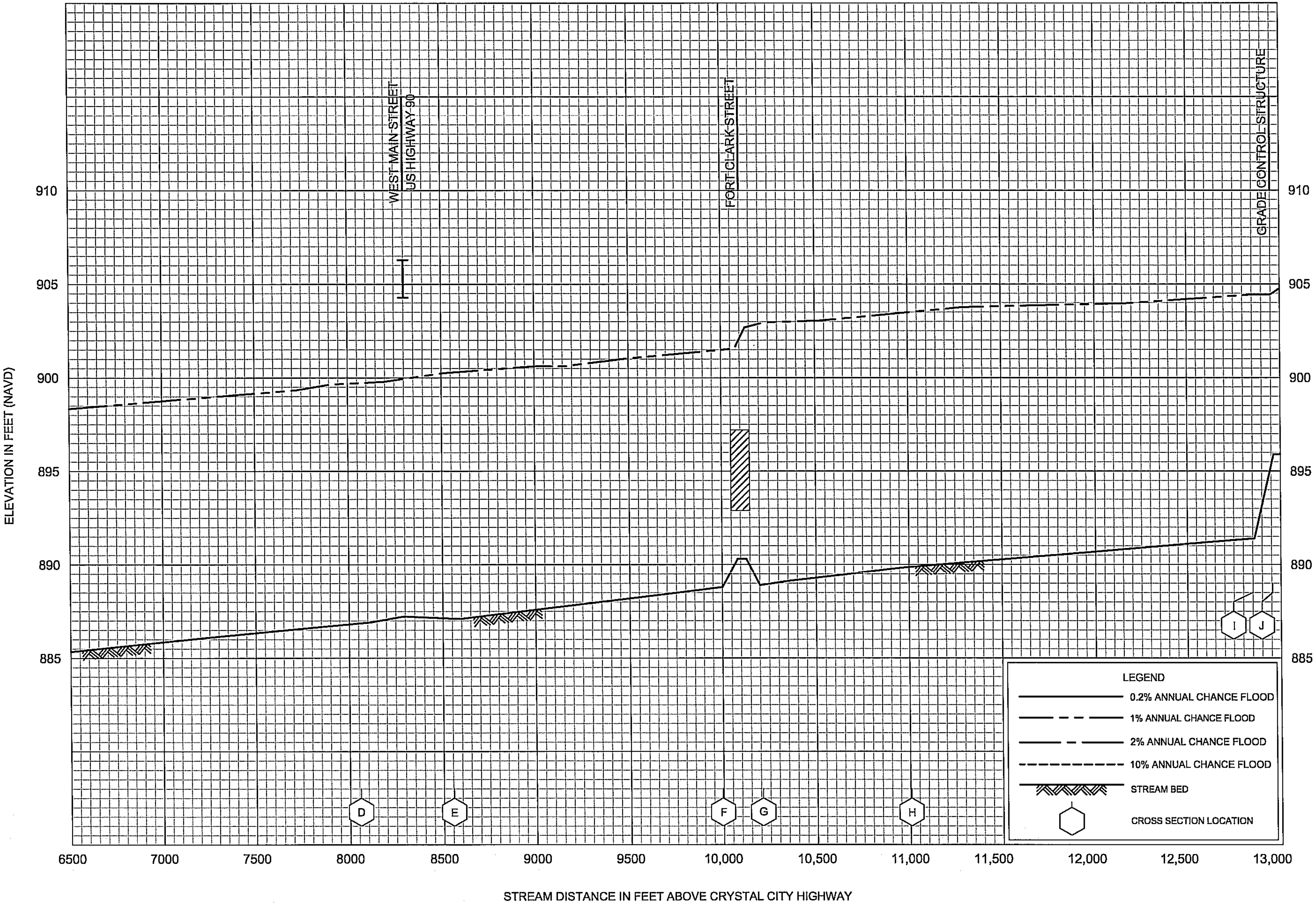
01P



FLOOD PROFILES

COOKS SLOUGH

FEDERAL EMERGENCY MANAGEMENT AGENCY

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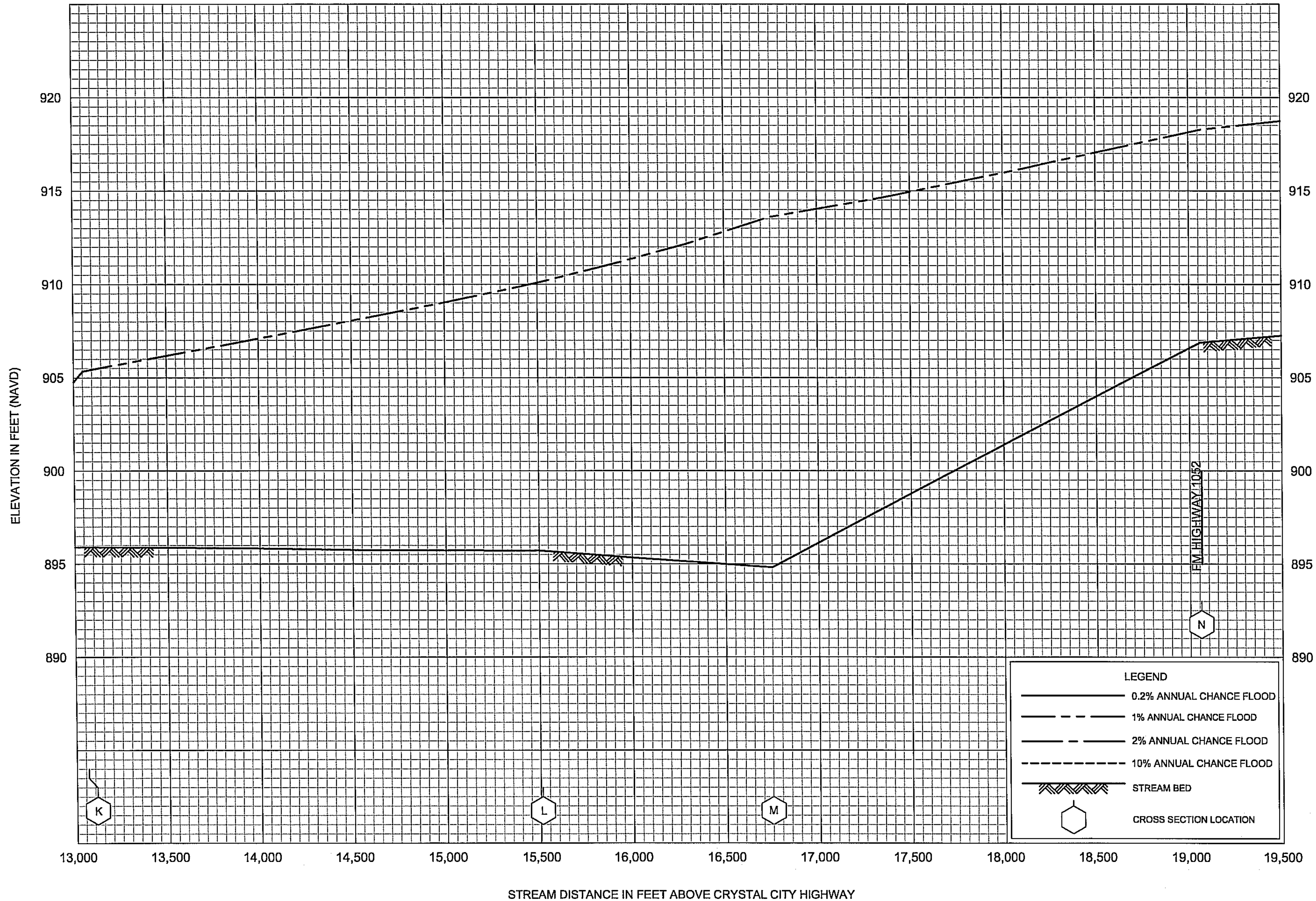

FLOOD PROFILES

COOKS SLOUGH

FEDERAL EMERGENCY MANAGEMENT AGENCY

UVALDE COUNTY, TX

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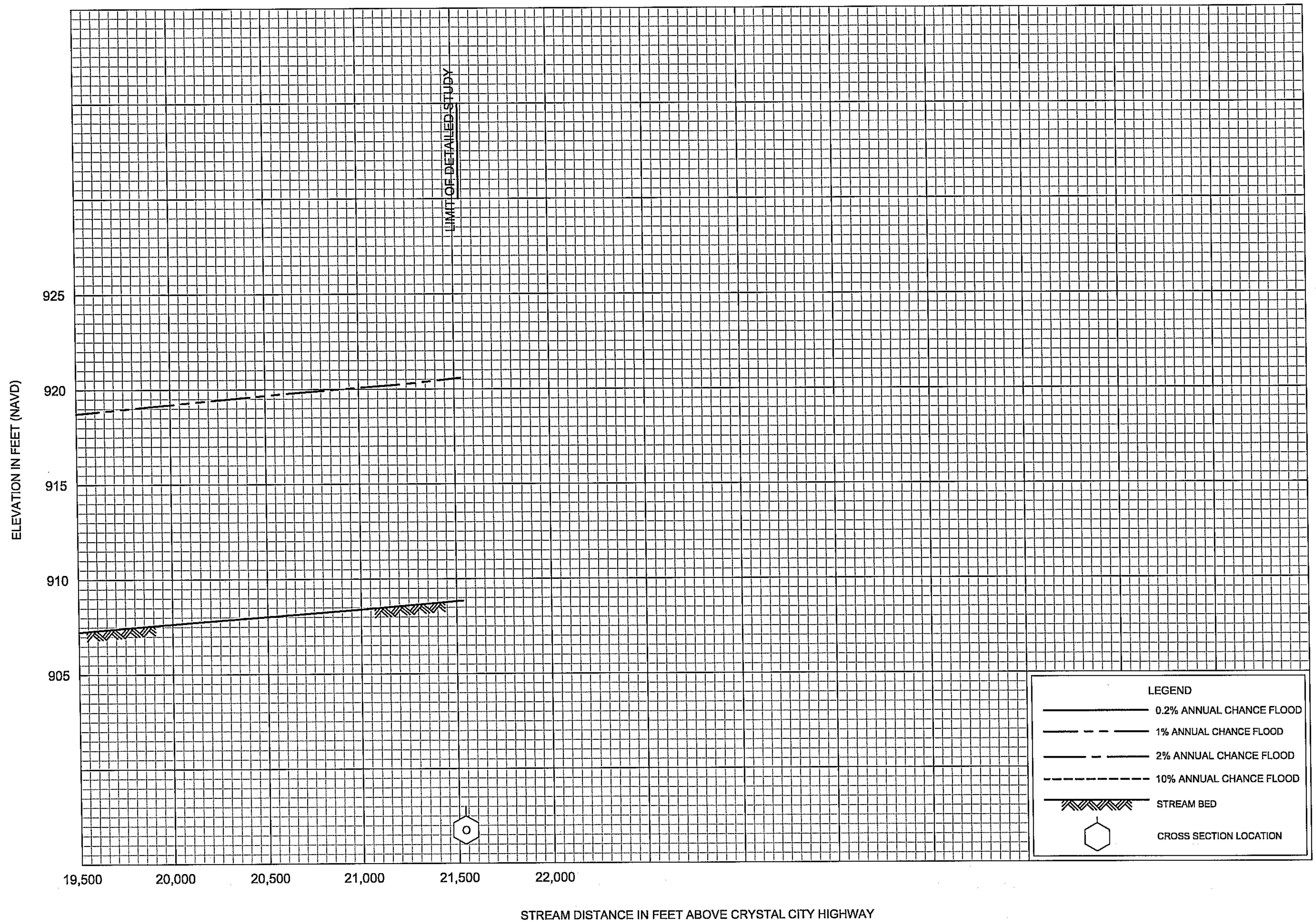
03P



FLOOD PROFILES

COOKS SLOUGH

FEDERAL EMERGENCY MANAGEMENT AGENCY

UVALDE COUNTY, TX

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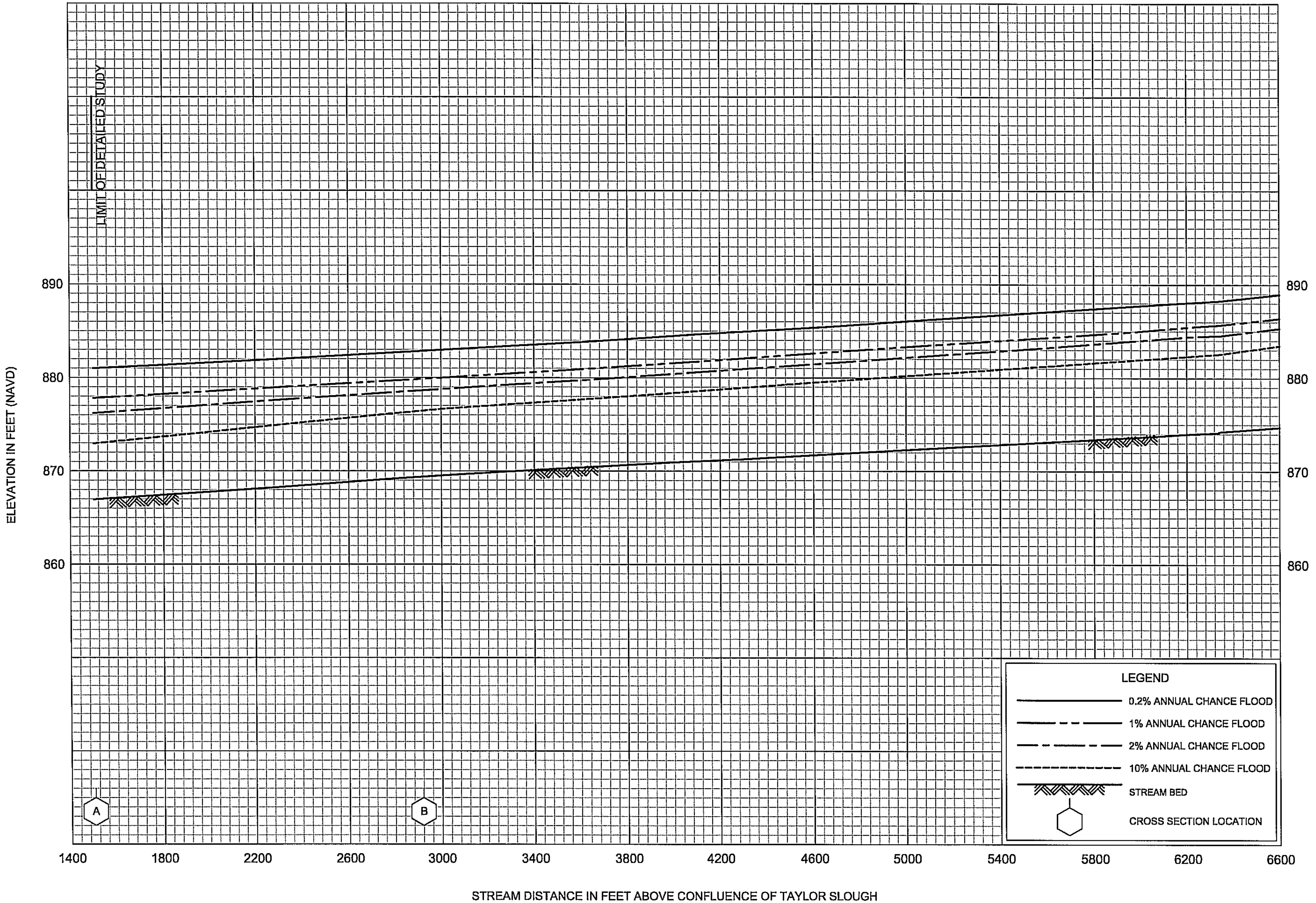


FLOOD PROFILES

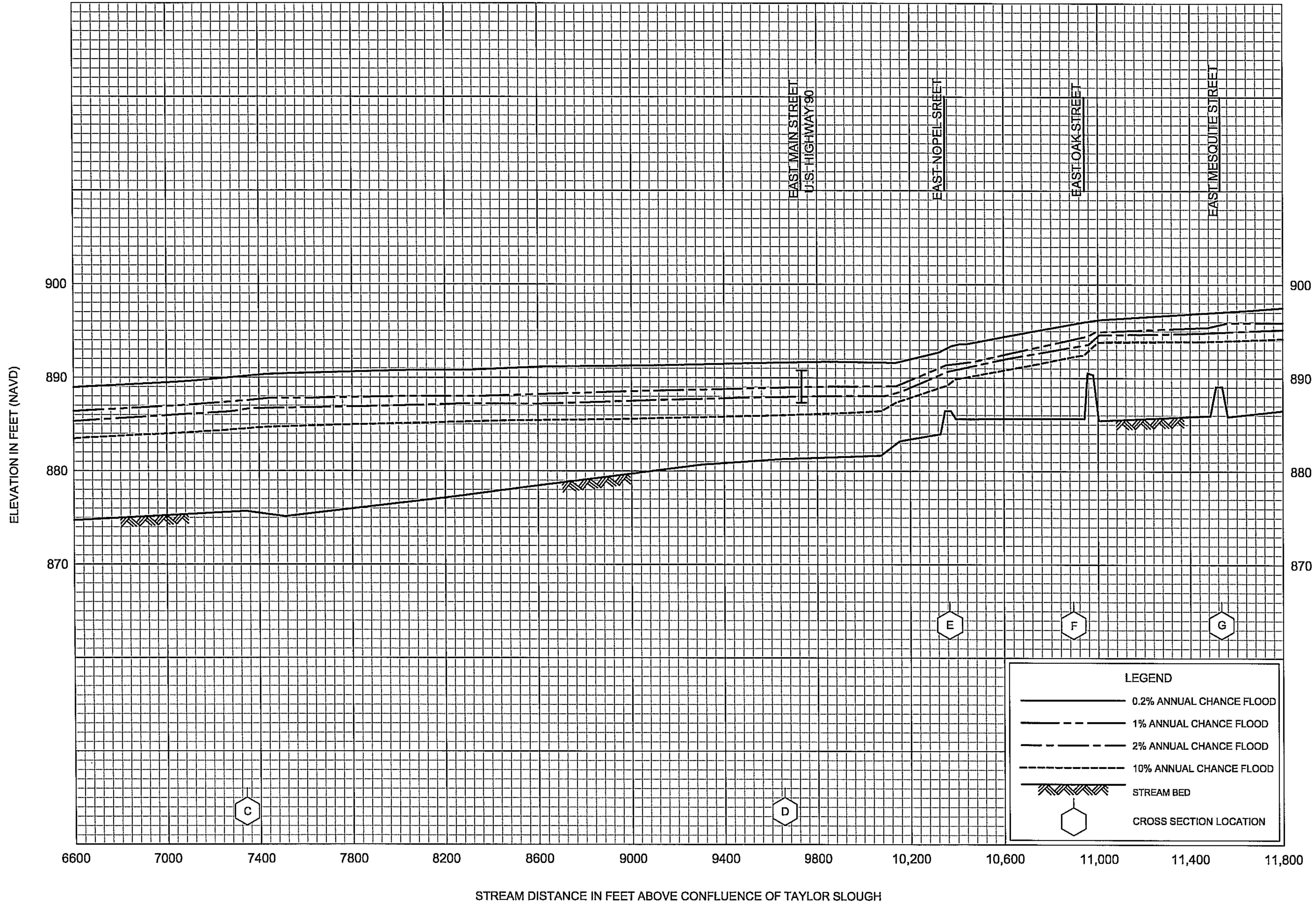
LEONA RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

UVALDE COUNTY, TX

AND INCORPORATED AREAS

05P



FLOOD PROFILES

LEONA RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

UVALDE COUNTY, TX

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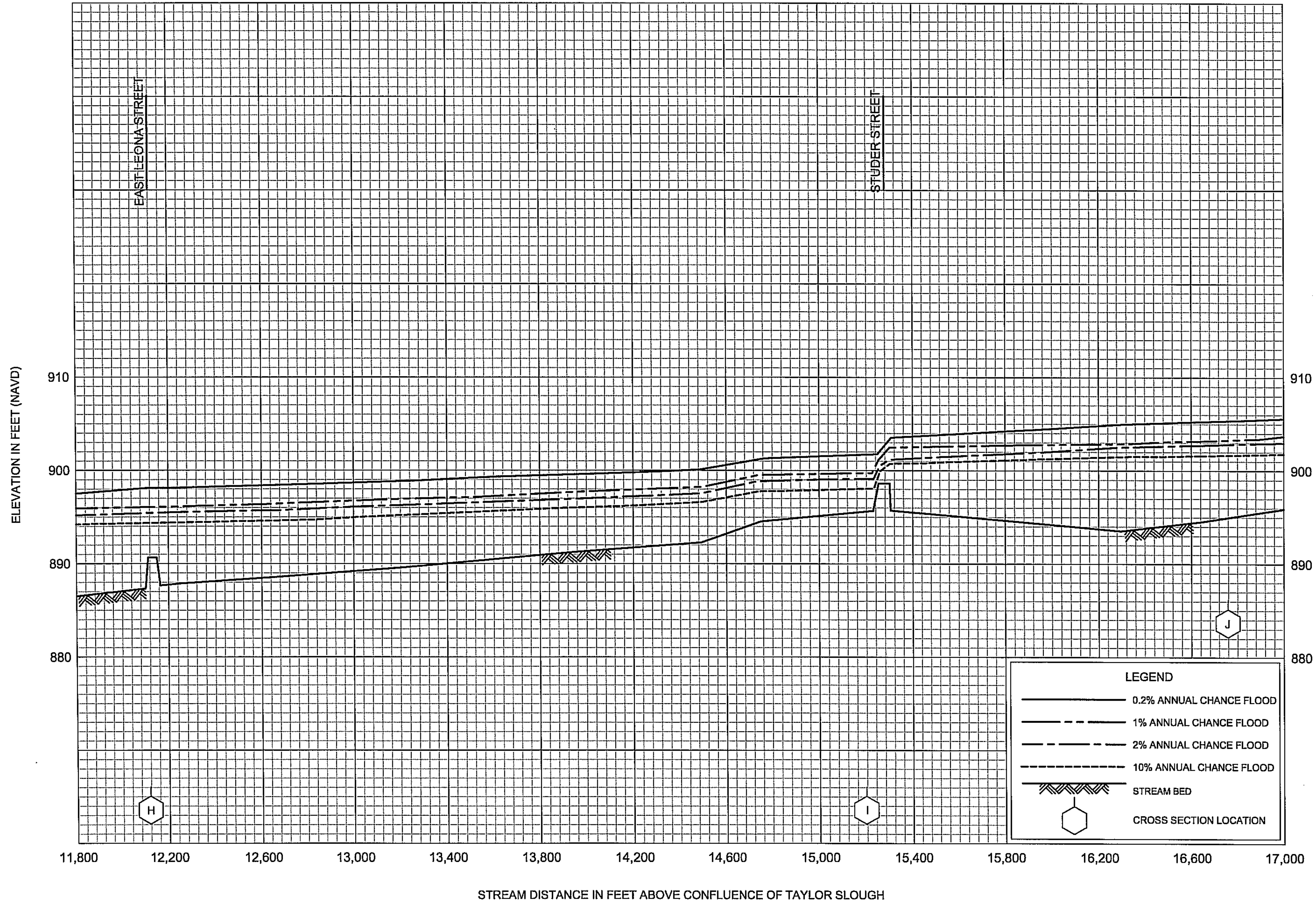
06P



FLOOD PROFILES

LEONA RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

UVALDE COUNTY, TX

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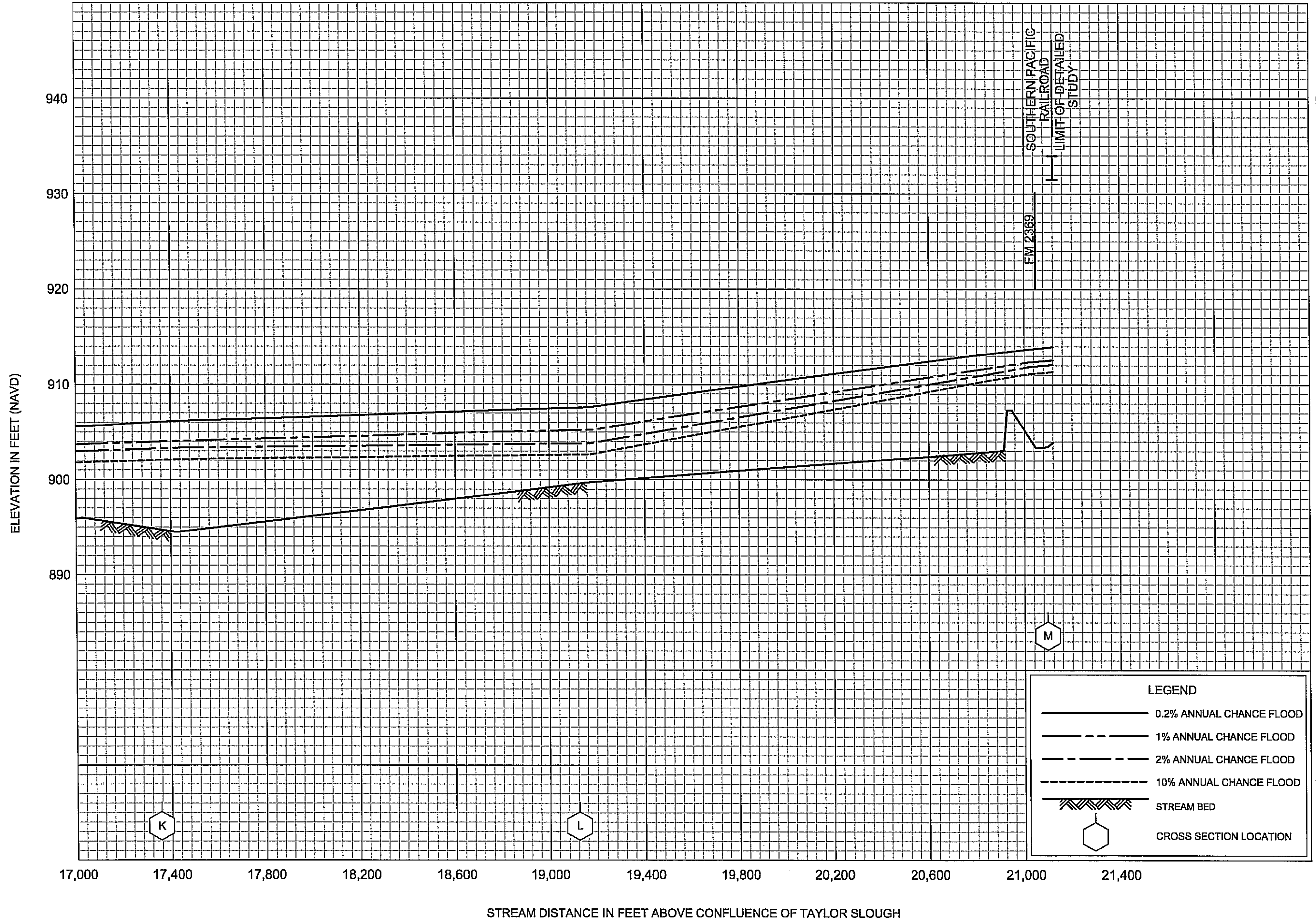

FLOOD PROFILES

LEONA RIVER

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UVALDE COUNTY, TX

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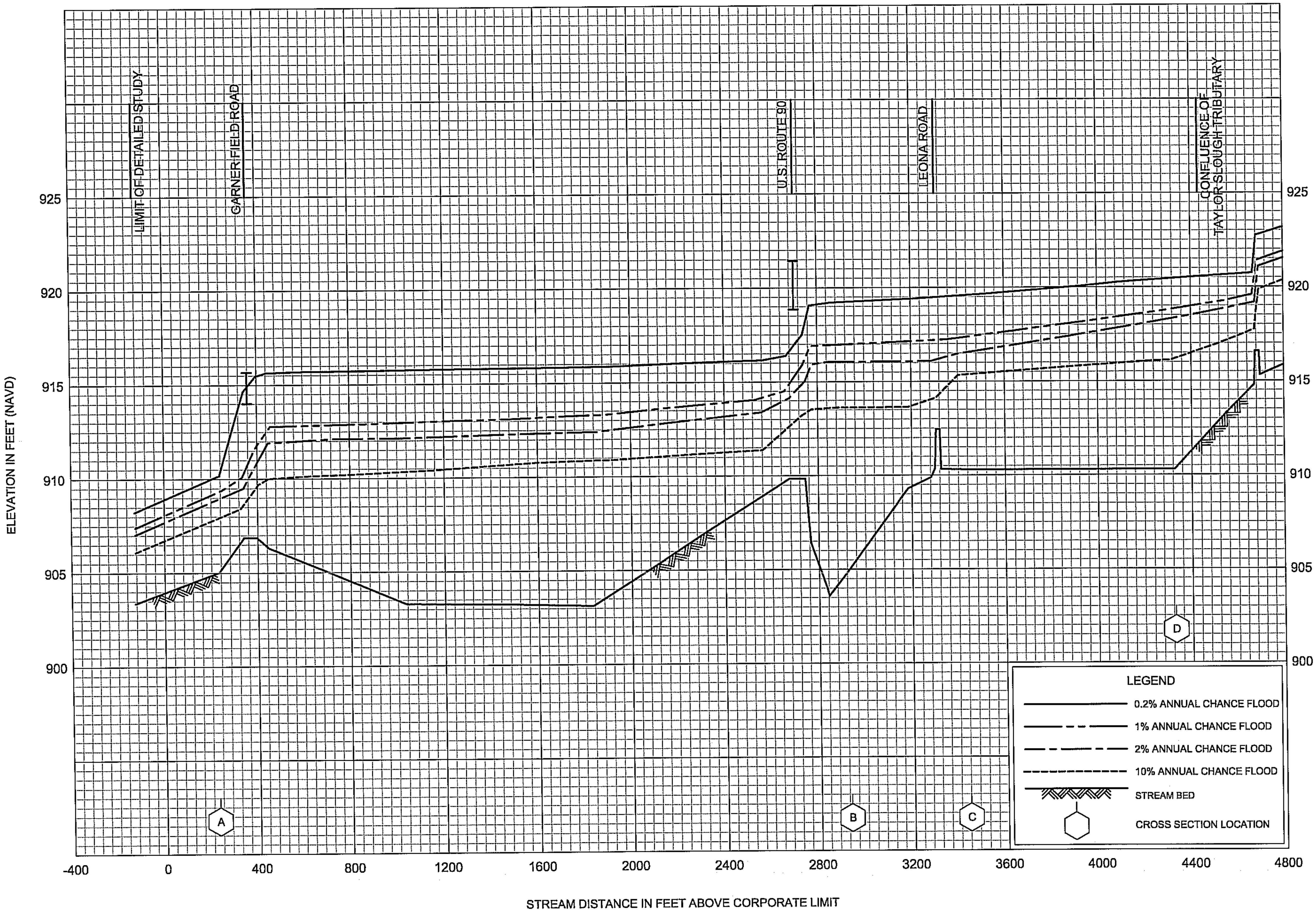

FLOOD PROFILES

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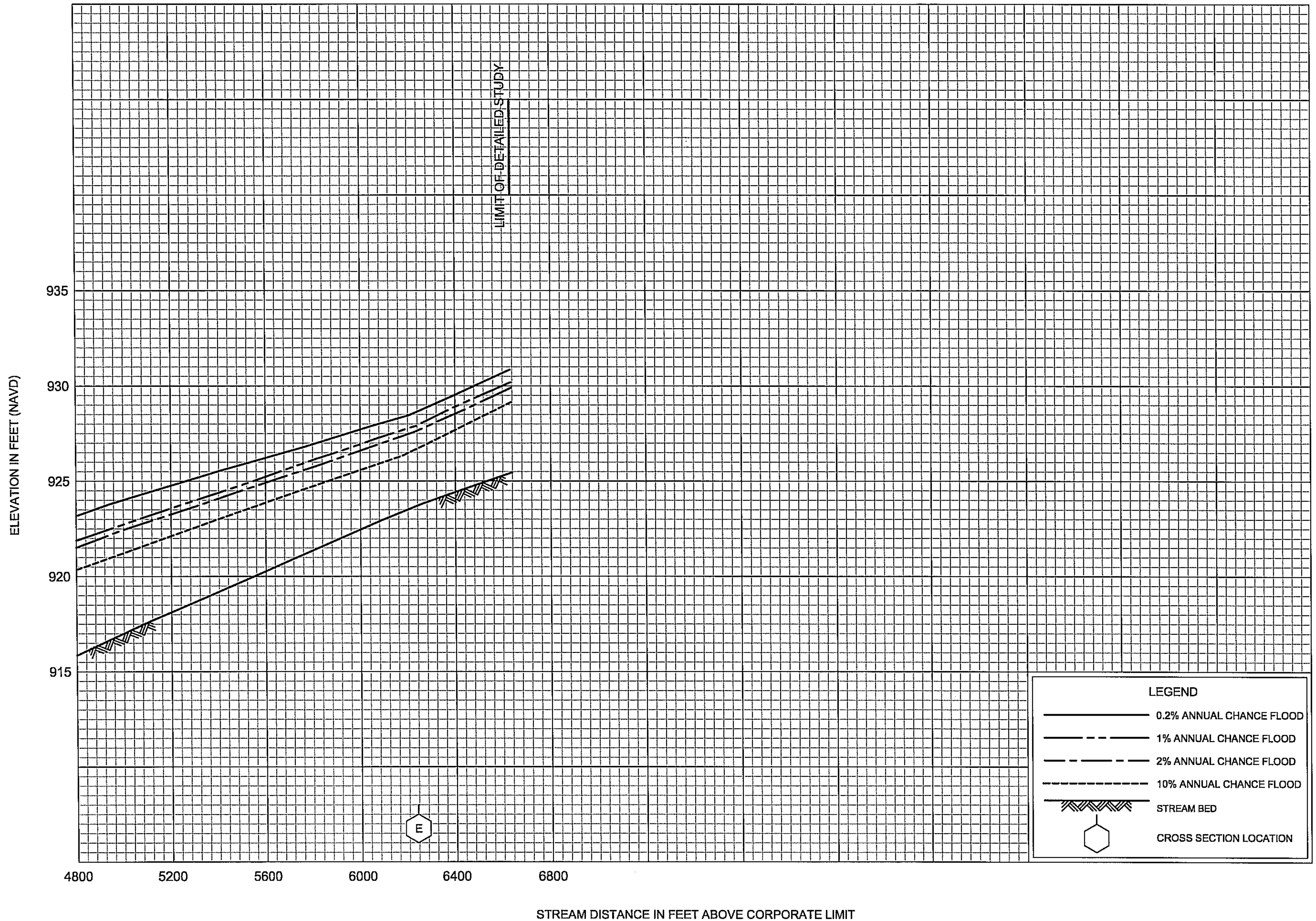

FLOOD PROFILES

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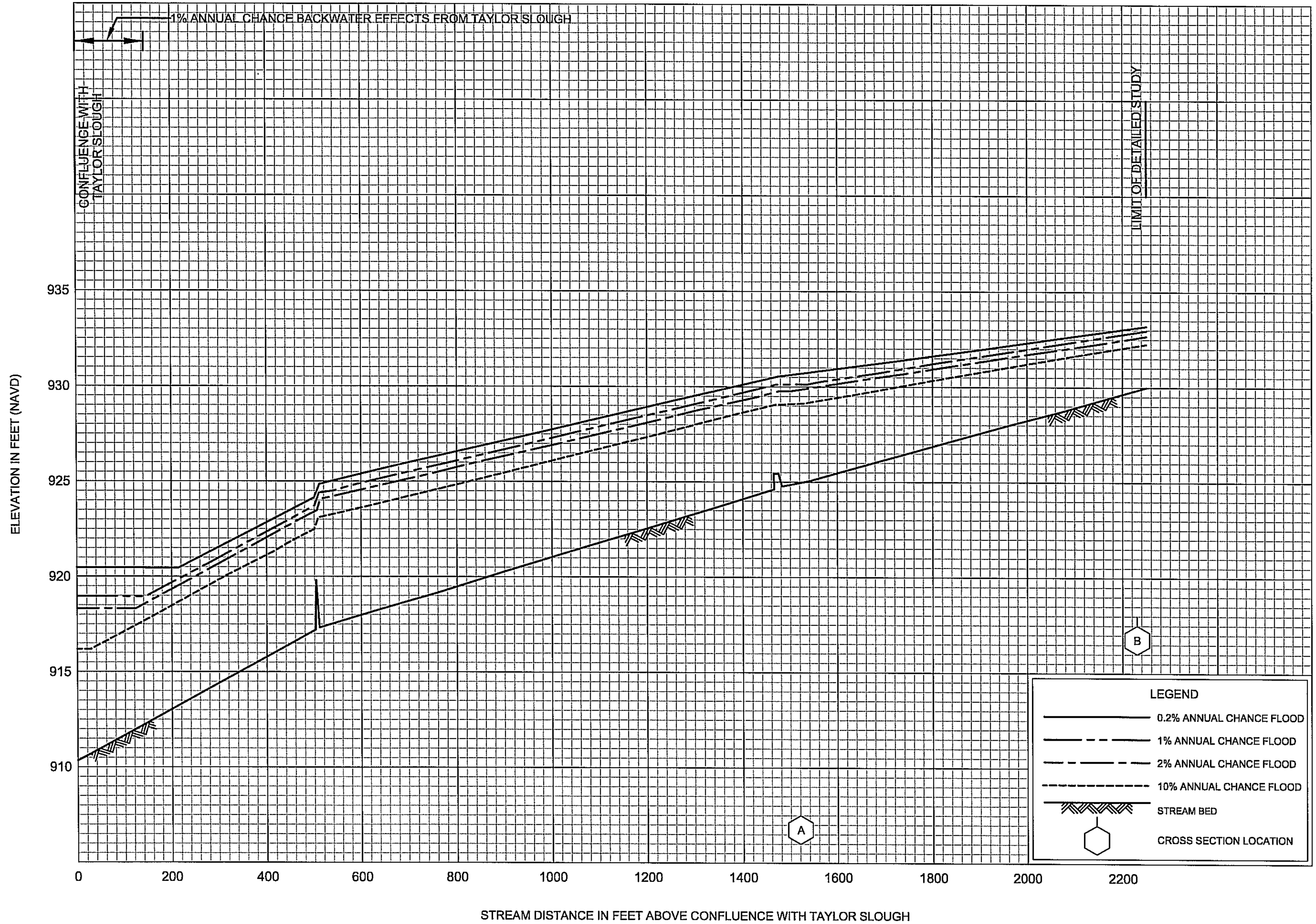

FLOOD PROFILES

TAYLOR SLOUGH TRIBUTARY

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